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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/665,658	09/20/2000	Harry B. Smith	A7583	5537

7590

08/13/2003

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EXAMINER

JAMAL, ALEXANDER

ART UNIT

PAPER NUMBER

2643

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/665,658

Applicant(s)

SMITH, HARRY B.

Examiner

Alexander Jamal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,6,8,22 and 26 is/are rejected.
- 7) ☒ Claim(s) 2,3,7,9,10 and 21 is/are objected to.
- 8) ☒ Claim(s) 5,11-20,23-25 and 27 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-4, 6-10, 21,22 and 26 are drawn to the structure interference suppression in transmission line conditioning, classified in Class 379, subclass 416.
 - II. Claims 5 and 11-20 are drawn to the structure of an electrical digital calculating computer, classified in class 708, subclass 100.
 - III. Claims 23-25 and 27 are drawn to the structure of Multiplex Communications, classified in class 370, subclass 351.

The inventions are distinct each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case invention I is the process in which the apparatus (invention II) can be used to practice. However, invention II as claimed will not perform only one specific process. Invention II may be used to read values in and manipulate input numbers in any kind of digital signal processing process.

3. Inventions I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case invention I is the process in which the apparatus (invention III) can be used to practice. However, invention III as claimed will not perform only one specific process. Invention III as claimed may be used to enhance the input or output signaling at any point in any network, not just at a receive wireline system.

4. Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. See MPEP § 806.05(d). In the instant case, invention II has separate utility such as being used to read values in and manipulate input numbers in any kind of digital signal processing process. Invention III has separate utility such as being used to enhance the input or output signaling at any point in any network, not just at a receive wireline system.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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6. During a telephone conversation with Kevin M. Barner on August 6th, 2003 a provisional election was made without traverse to prosecute the invention of Harry B. Smith (09665658), claims 1-4, 6-10, 21, 22 and 26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5, 11-20, 23-25 and 27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

7. **Claims 6, 10** objected to because of the following informalities:
- a. **Claim 6:** "Firther" should be "Further", and "form" should be "from"
 - b. **Claim 10:** "apparatus" should be "apparatus"

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claim 6** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation of “aforementioned pre-programmed plus and minus values”. There is insufficient antecedent basis in claims 1 or 4 for this limitation in the claim.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 1,4,8,22,26** rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al. (4539689), and further in view of McCool et al. (4238746).

- a. **Claim 1:** Chiu discloses a method to increase the signal to noise ratio of a receive wireline system (data modem) (Col 1, lines 12-15). The method comprising:
- i. Chiu’s method comprises receiving test impulse signals (ABSTRACT) on a wireline (a wireline interface is inherent to a high-speed modem).
 - ii. The input signals (plus noise) are amplified (Col 4 lines 15-19).
 - iii. Storing the signals plus noise in the memory device (Col 5 lines 49-55).
 - iv. Forming a matrix representing the in-phase and quadrature versions of the received signals (Col 4 lines 35-39).

But Chiu does not teach to estimate the magnitude and polarity of the noise portion of the received signal, or to subtract the estimated noise value from the received signal in order to reduce the noise on the signal.

McCool teaches that an adaptive line enhancer can enhance signaling in a noise field where there is poor signal to noise ratio at the input (Col 1 lines 1-17). He teaches that to enhance received signals, the received signal and a delayed version of the received signal (in-phase and quadrature) must be iteratively processed by adaptive filter 14 (Fig. 1), and an estimate of the noise (uncorrelated) signal produced. The noise (uncorrelated) signal is subtracted from the received signal and as such, the method filters out the uncorrelated noise (Fig 1, summer 16, Col 1 lines 16-20).

It would have been obvious to one of ordinary skill in the art at the time of this application to increase the signal to noise ratio of the wireline receiver by iteratively processing the in-phase and quadrature versions of the received signal to produce a noise estimate which is subtracted from the received signal, thereby producing a noise-reduced signal.

b. Claim 4: McCool's processing step comprises:

- i. A number of value probes which alter the received signal iteratively (Fig 2; w1, w2 ect..).
- ii. An estimate of the noise (uncorrelated) signal ($Y(j)$ in Fig. 2) is given by summing the resultant values of several iterative steps.(Col 9 lines 45-60).

c. Claim 8: Chiu's method comprises:

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- i. Providing processing means that does not adversely compromise the bandwidth and signal handling capabilities of the system by performing the processing on an impulse sent before the data (Col 2 lines 16-23).
- ii. The time delay for processing is short (Col 2 lines 24-28).
- iii. The short time delay is utilized to setup the system such that the received signal is increased and the received noise is reduced, as such, the signal-to-noise is inherently improved.

d. Claim 22:

- i. Chiu's method comprises implementing a method of near-real time processing by providing for a fixed time delay (Col 2 lines 16-23).
- ii. McCool's method comprises subtracting a noise (uncorrelated) signal estimate from the received signal (Fig 1, summer 16, Col 1 lines 16-20).
- iii. The fact that reducing the noise of a received signal is analogous to an introduction of energy at a lower temperature in a thermal system and improves the effective entropy with each trial, in inherent to the fact that noise is being taken from the system.

e. Claim 26:

- i. McCool's method enhances the received signal by enabling a stronger signal relative to noise by removing the uncorrelated noise signal (Col 1 lines 16-20).

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- ii. The fact that the method provides for longer communication distance and/or quicker access time potential is inherent in the fact that the noise of the received signal has been reduced.

Allowable Subject Matter

12. **Claims 2,3,7,9,10,21** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 703-305-3433. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 703-305-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9315 for After Final communications.

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AJ

August 11, 2003



DUC NGUYEN
PRIMARY EXAMINER